

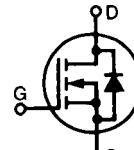
HiPerFET™

Power MOSFETs

IXFH/IXFT/IXFX14N100
IXFH/IXFT/IXFX15N100

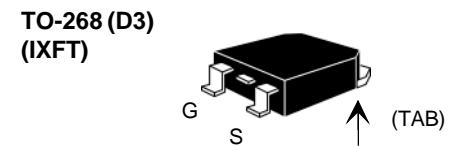
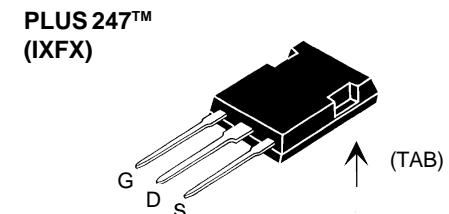
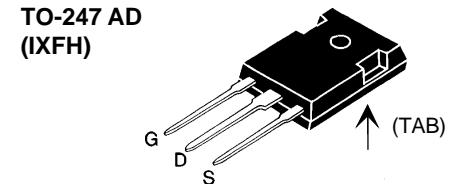
V_{DSS}	I_{D25}	$R_{DS(on)}$
1000 V	14 A	0.75 Ω
1000 V	15 A	0.70 Ω
$t_{rr} \leq 200 \text{ ns}$		

N-Channel Enhancement Mode
High dv/dt , Low t_{rr} , HDMOS™ Family



Preliminary data sheet

Symbol	Test Conditions	Maximum Ratings		
V_{DSS}	$T_J = 25^\circ\text{C}$ to 150°C	1000		V
V_{DGR}	$T_J = 25^\circ\text{C}$ to 150°C ; $R_{GS} = 1 \text{ M}\Omega$	1000		V
V_{GS}	Continuous	± 20		V
V_{GSM}	Transient	± 30		V
I_{D25}	$T_c = 25^\circ\text{C}$	14N100	14	A
		15N100	15	A
I_{DM}	$T_c = 25^\circ\text{C}$, pulse width limited by T_{JM}	14N100	56	A
		15N100	60	A
I_{AR}	$T_c = 25^\circ\text{C}$	14N100	14	A
		15N100	15	A
E_{AR}	$T_c = 25^\circ\text{C}$	45		mJ
dv/dt	$I_s \leq I_{DM}$, $di/dt \leq 100 \text{ A}/\mu\text{s}$, $V_{DD} \leq V_{DSS}$, $T_J \leq 150^\circ\text{C}$, $R_G = 2 \Omega$	5		V/ns
P_D	$T_c = 25^\circ\text{C}$	360		W
T_J		-55 ... +150		$^\circ\text{C}$
T_{JM}		150		$^\circ\text{C}$
T_{stg}		-55 ... +150		$^\circ\text{C}$
T_L	1.6 mm (0.062 in.) from case for 10 s	300		$^\circ\text{C}$
M_d	Mounting torque	1.13/10		Nm/lb.in.
Weight		6		g



Features

- International standard packages
- Low $R_{DS(on)}$ HDMOS™ process
- Rugged polysilicon gate cell structure
- Unclamped Inductive Switching (UIS) rated
- Low package inductance
 - easy to drive and to protect
- Fast intrinsic Rectifier

Applications

- DC-DC converters
- Battery chargers
- Switched-mode and resonant-mode power supplies
- DC choppers
- AC motor control
- Temperature and lighting controls

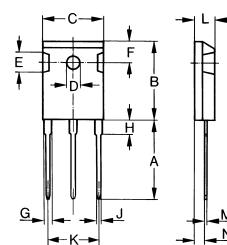
Advantages

- Easy to mount with 1 screw (TO-247) (isolated mounting screw hole) or mounting clip or spring (PLUS 247™)
- High power surface mountable package
- High power density

Symbol	Test Conditions	Characteristic Values		
		($T_J = 25^\circ\text{C}$, unless otherwise specified)	min.	typ.
V_{DSS}	$V_{GS} = 0 \text{ V}$, $I_D = 1 \text{ mA}$	1000		V
$V_{GS(th)}$	$V_{DS} = V_{GS}$, $I_D = 4 \text{ mA}$	2.5		4.5 V
I_{GSS}	$V_{GS} = \pm 20 \text{ V}_{DC}$, $V_{DS} = 0$		± 100	nA
I_{DSS}	$V_{DS} = 0.8 \cdot V_{DSS}$ $V_{GS} = 0 \text{ V}$	$T_J = 25^\circ\text{C}$ $T_J = 125^\circ\text{C}$	250	μA 1 mA
$R_{DS(on)}$	$V_{GS} = 10 \text{ V}$, $I_D = 0.5 \cdot I_{D25}$	14N100 15N100 Pulse test, $t \leq 300 \mu\text{s}$, duty cycle $d \leq 2 \%$	0.75 0.70	Ω Ω

Symbol **Test Conditions**
Characteristic Values
 $(T_J = 25^\circ\text{C}$, unless otherwise specified)

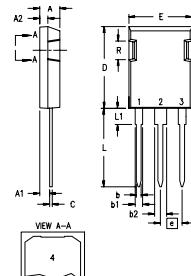
		min.	typ.	max.
g_{fs}	$V_{DS} = 10 \text{ V}$; $I_D = 0.5 \cdot I_{D25}$, pulse test	6	10	S
C_{iss} C_{oss} C_{rss}	$V_{GS} = 0 \text{ V}$, $V_{DS} = 25 \text{ V}$, $f = 1 \text{ MHz}$	4500 430 150		pF pF pF
$t_{d(on)}$ t_r $t_{d(off)}$ t_f	$V_{GS} = 10 \text{ V}$, $V_{DS} = 0.5 \cdot V_{DSS}$, $I_D = 0.5 \cdot I_{D25}$ $R_G = 2 \Omega$ (External),	27 30 120 30		ns ns ns ns
$Q_{g(on)}$ Q_{gs} Q_{gd}	$V_{GS} = 10 \text{ V}$, $V_{DS} = 0.5 \cdot V_{DSS}$, $I_D = 0.5 \cdot I_{D25}$	220 30 85		nC nC nC
R_{thJC} R_{thCK}	(TO-247 Case Style)	0.25	0.35	K/W K/W

TO-247 AD (IXFH) Outline


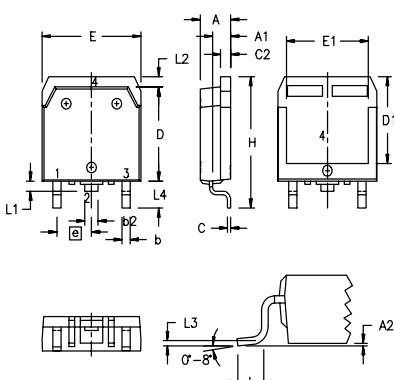
Dim.	Millimeter Min.	Millimeter Max.	Inches Min.	Inches Max.
A	19.81	20.32	0.780	0.800
B	20.80	21.46	0.819	0.845
C	15.75	16.26	0.610	0.640
D	3.55	3.65	0.140	0.144
E	4.32	5.49	0.170	0.216
F	5.4	6.2	0.212	0.244
G	1.65	2.13	0.065	0.084
H	-	4.5	-	0.177
J	1.0	1.4	0.040	0.055
K	10.8	11.0	0.426	0.433
L	4.7	5.3	0.185	0.209
M	0.4	0.8	0.016	0.031
N	1.5	2.49	0.087	0.102

Source-Drain Diode
Characteristic Values
 $(T_J = 25^\circ\text{C}$, unless otherwise specified)

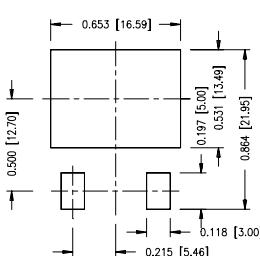
Symbol	Test Conditions	min.	typ.	max.
I_s	$V_{GS} = 0 \text{ V}$	14N100 15N100		14 A 15 A
I_{SM}	Repetitive; pulse width limited by T_{JM}	14N100 15N100		56 A 60 A
V_{SD}	$I_F = I_s$, $V_{GS} = 0 \text{ V}$, Pulse test, $t \leq 300 \mu\text{s}$, duty cycle $d \leq 2 \%$			1.5 V
t_{rr}	$I_F = I_s$ $-di/dt = 100 \text{ A}/\mu\text{s}$, $V_R = 100 \text{ V}$	$T_J = 25^\circ\text{C}$	200	ns
Q_{RM}		$T_J = 125^\circ\text{C}$	350	ns
I_{RM}		$T_J = 25^\circ\text{C}$	1	μC
		$T_J = 125^\circ\text{C}$	2	μC
		$T_J = 25^\circ\text{C}$	10	A
		$T_J = 125^\circ\text{C}$	15	A

PLUS247™ (IXFX) Outline


Dim.	Millimeter Min.	Millimeter Max.	Inches Min.	Inches Max.
A	4.83	5.21	.190	.205
A ₁	2.29	2.54	.090	.100
A ₂	1.91	2.16	.075	.085
b	1.14	1.40	.045	.055
b ₁	1.91	2.13	.075	.084
b ₂	2.92	3.12	.115	.123
C	0.61	0.80	.024	.031
D	20.80	21.34	.819	.840
E	15.75	16.13	.620	.635
e	5.45	BSC	.215	BSC
L	19.81	20.32	.780	.800
L ₁	3.81	4.32	.150	.170
Q	5.59	6.20	.220	.244
R	4.32	4.83	.170	.190

TO-268AA (D³ PAK)


Dim.	Millimeter Min.	Millimeter Max.	Inches Min.	Inches Max.
A	4.9	5.1	.193	.201
A ₁	2.7	2.9	.106	.114
A ₂	.02	.25	.001	.010
b	1.15	1.45	.045	.057
b ₂	1.9	2.1	.075	.083
C	.4	.65	.016	.026
D	13.80	14.00	.543	.551
E	15.85	16.05	.624	.632
E ₁	13.3	13.6	.524	.535
e	5.45	BSC	.215	BSC
H	18.70	19.10	.736	.752
L	2.40	2.70	.094	.106
L ₁	1.20	1.40	.047	.055
L ₂	1.00	1.15	.039	.045
L ₃	0.25	BSC	.010	BSC
L ₄	3.80	4.10	.150	.161

Min. Recommended Footprint


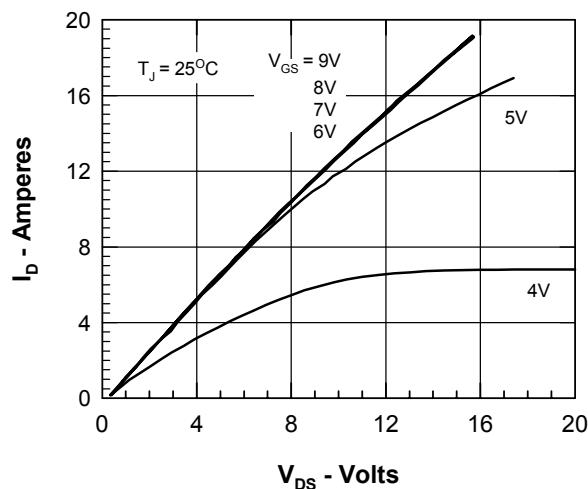


Fig.1 Output Characteristics

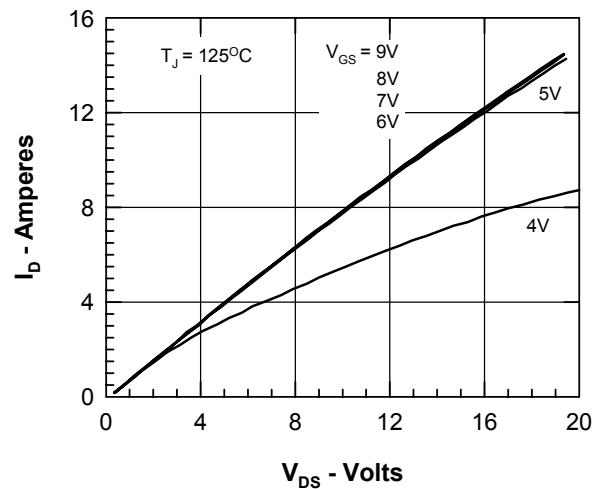


Fig.2 Output characteristics at elevated temperature

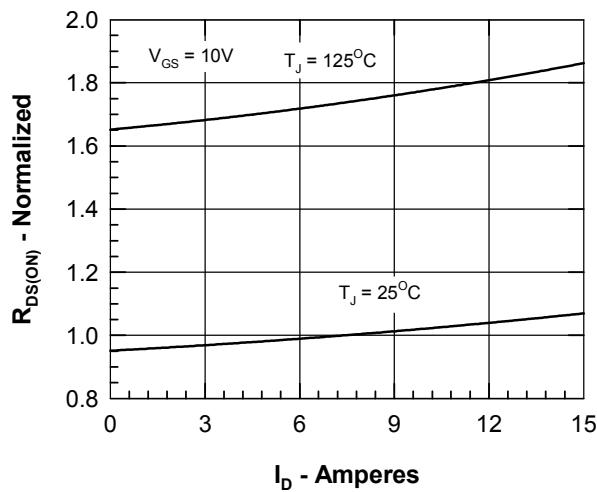


Fig.3 $R_{DS(on)}$ vs. Drain Current

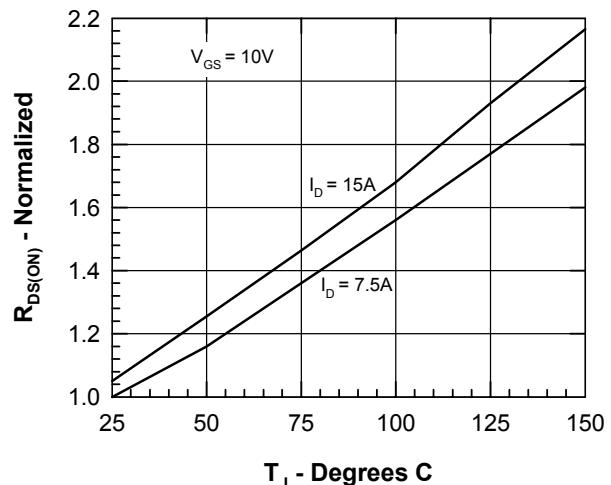


Fig.4 Temperature Dependence of Drain to Source Resistance

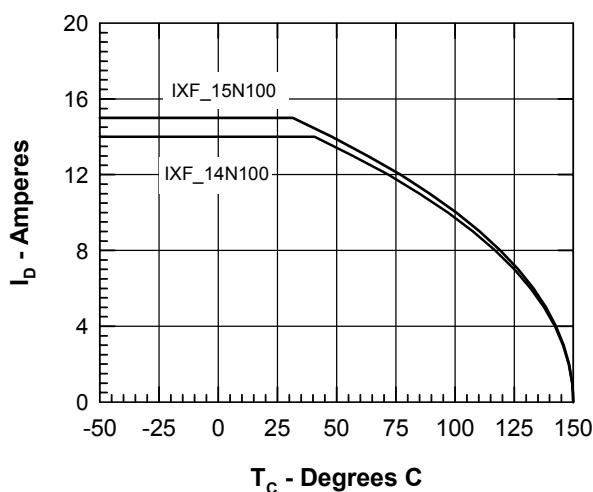


Fig.5 Drain Current vs. Case Temperature

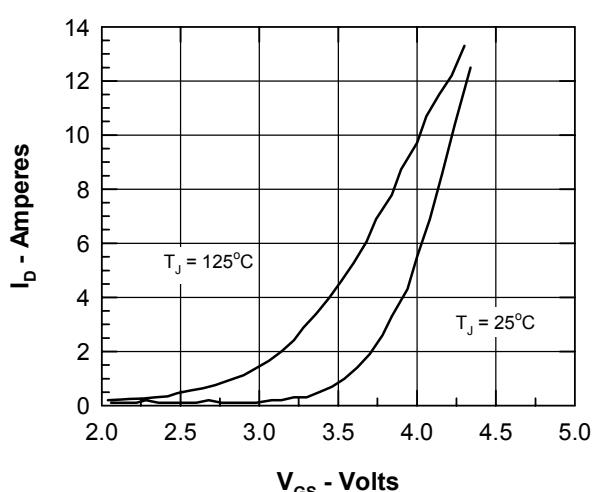


Fig.6 Input admittance

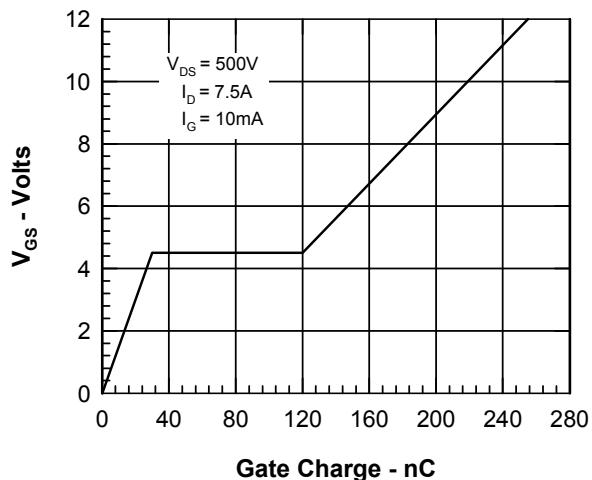


Fig.7 Gate Charge Characteristic Curve

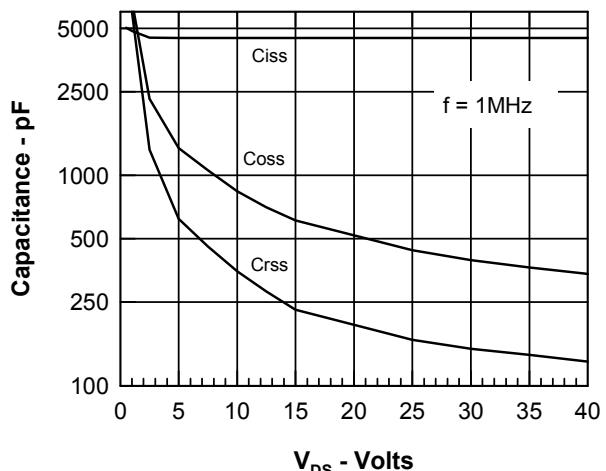


Fig.8 Capacitance Curves

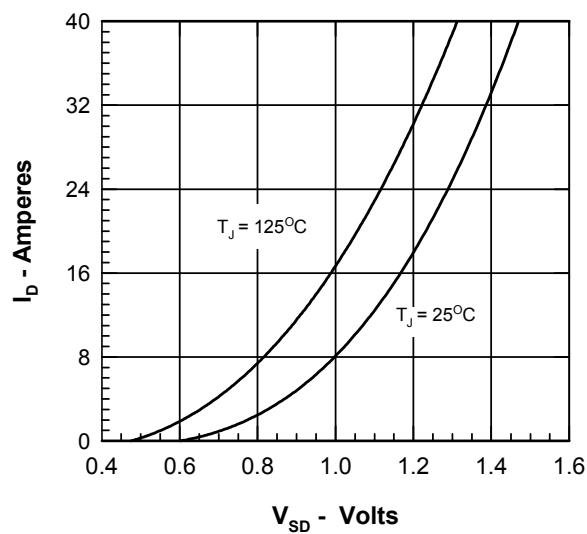


Fig.9 Source current vs Source drain voltage.

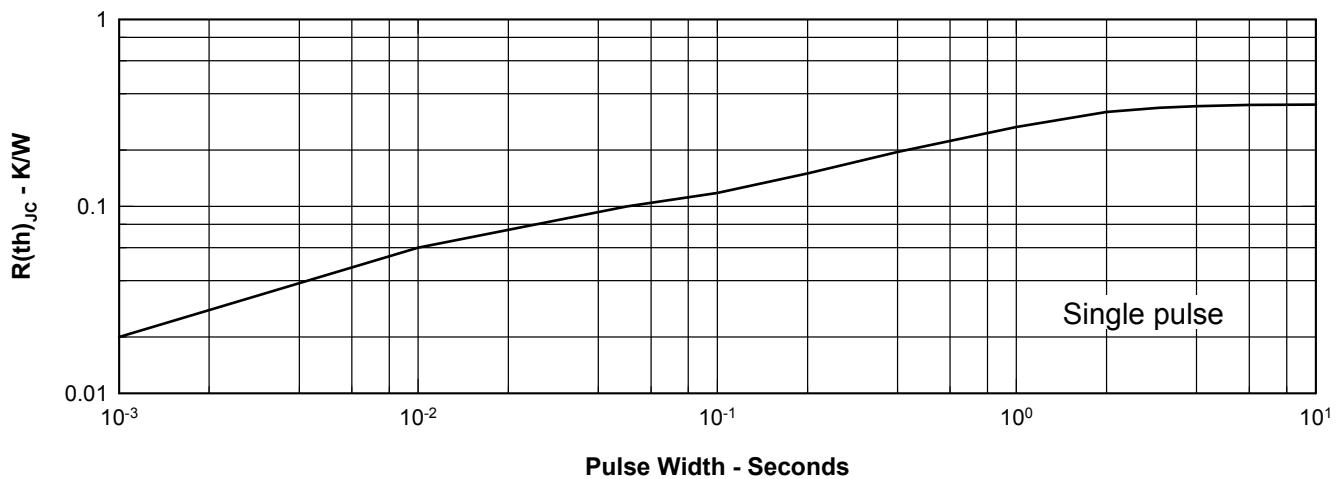


Fig.10 Transient Thermal Impedance